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# *Platismatia norvegica* – a new lichen record from European Russia

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**Abstract:** Suboceanic lichen *Platismatia norvegica* is recorded for the first time in European Russia, in old-growth spruce forest, on the highest point of low-mountain ridge Vetreniy Poyas – Olovgora (Arkhangelsk region).

## INTRODUCTION

*Platismatia norvegica* (Lynge) W. L. Culb. & C. F. Culb is a broadly foliose lichen in the family *Parmeliaceae*; it is considered a boreal suboceanic species, occurring in NW Europe (Norway, Sweden, Finland, and Scotland in UK) (Fig. 1), E and NW North America (eastern Canada, mainly Newfoundland, and southeastern Alaska), and occasionally in Asia (Culberson & Culberson, 1968; Rassadina, 1971; Thell & Moberg, 2011). In the Russian Federation, the species is currently known only in the southern part of the Far East – the Jewish Autonomous Region, Primorsky Krai and Sakhalin (Tolpysheva, 1990; Skirina, 1995; Chabanenko, 2002; Urbanavichus, 2010). The species inhabits coniferous, mixed coniferous and deciduous, and occasionally deciduous forests where it grows on the bark of pine trees, as well as on rocks and screes (Rassadina, 1971). Outside the Nordic countries the species is mainly an epiphyte of conifers in humid situations (Thell & Moberg, 2011).

*Platismatia norvegica* is a red-listed lichen in Sweden and Finland (Thell & Moberg, 2011), and in some parts of Russia, i.e. Primorsky Krai (The Red Data Book of Primorsky Krai, 2008) and Sakhalin (The Sakhalin Region Red Data Book, 2005). High sensitivity to air pollution and to disturbance of natural habitats (e.g. forest cuttings and fires) of this lichen has been pointed out among the limiting factors restricting the occurrence of the species (Red Data Book of Primorsky Krai, 2008). Distribution pattern of *Platismatia norvegica* is closely related to the moisture conditions of the habitat (Lidén, 2009). A study conducted in Norway and Sweden demonstrated that in the suboceanic areas population of *P. norvegica* was stronger linked with the microclimatic moisture conditions than in oceanic areas. Both less acidic bark pH values and close proximity to open water were important for the occurrence of *P. norvegica* in the continental region, while insignificant in the oceanic environments (Lidén & Hilmo, 2005). There is also a successful attempt to transplant thallus of this species in natural habitats (Lidén et al., 2004).

## MATERIAL AND METHODS

The field work was carried out in June 2012 and 2013, in Arkhangelsk region, Olovgora, which is the highest point of low-mountain ridge Vetreniy Poyas (344 m a. s. l.). This ridge is a highland open to sea winds; it is about 200 km long and 10–15 km wide (63°N, 36–39°E), situated along the southern coast of the Onega Bay of the White Sea. The ridge is a part of the Baltic Shield, clearly rising above the surrounding lowlands. The ridge has a steep northern slope, and a flat-lying southern slope, and consists of several ridges 200–300 m high, elongated to the SE. Olovgora is located 45 km south of the White Sea. It is formed by exposed at the surface solid Proterozoic crystalline ultramafic rock (komatiitic basalt) conglomerates of different size (Kulikova et al., 2007). The climate is characterized by frequent changes of air masses, causing athmospheric instability. Annual rainfall ranges from 400 to 540 mm, the number of wet days is up to 200 days a year (Gromtsev, 2008).

Old-growth (over 300 years old) spruce forest vegetation of Olovgora has no traces of logging or fire. Forest stand is formed by Picea obovata Ledeb. (66%) and Betula pubescens Ehrh. (34%) (Fig. 2). The soil cover is dominated by Vaccinium myrtillus L., V. vitis-idaea L., Ledum

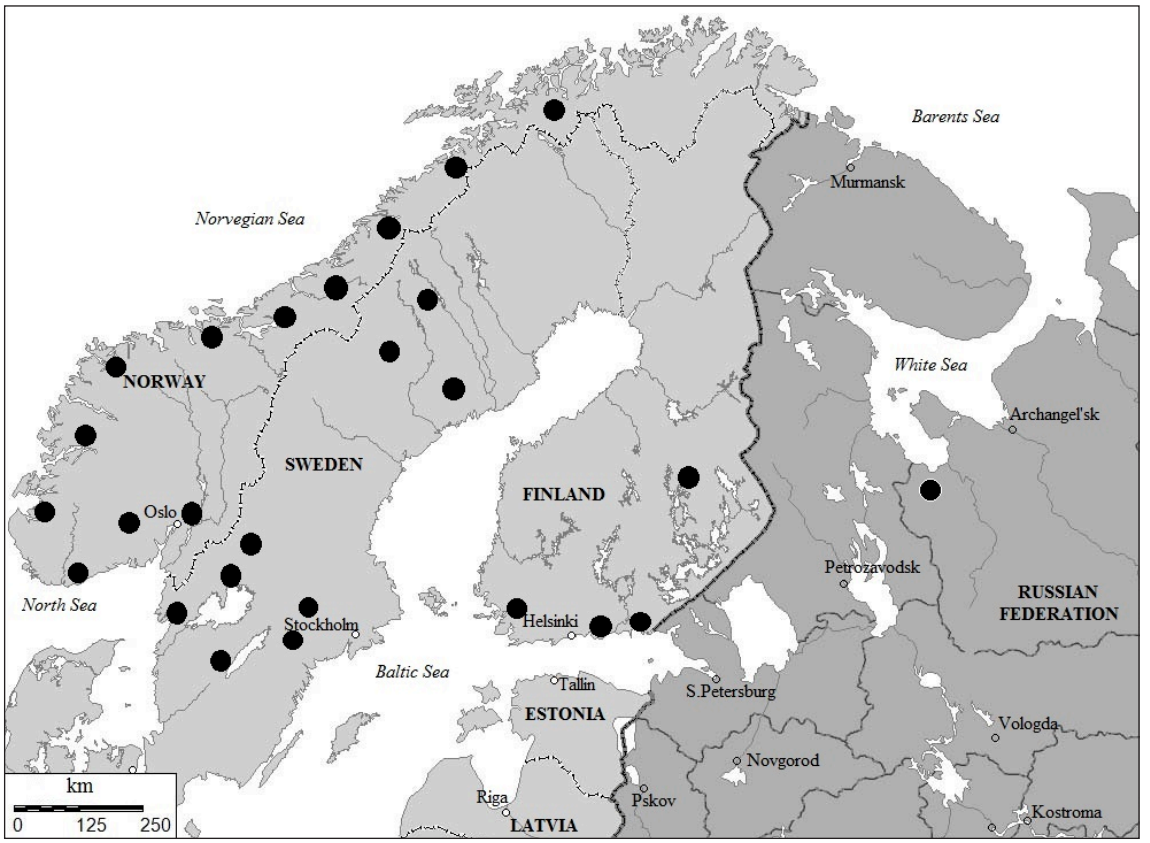


**Fig. 1.** The distribution of *Platismatia norvegica* in Northern Europe (according to Thell & Moberg, 2011, amended). Dots (●) in Fennoscandia indicate the provinces where the species has been recorded, in Russian Federation it marks the exact locality of *P. norvegica*.

**Fig. 2.** Habitat of *Platismatia norvegica* in spruce-birch forest (Olovgora, Arkhangelsk region, Russia).

palustre L., and Calluna vulgaris (L.) Hull., as well as a variety of green mosses, liverworts and lichens. The age of forest stand varies between 42–260 years, height of trees – 6–15 m, diameter of trunks (at a height of 130 cm) – 13–36 cm. The density of crown is 60%; there is a large amount of dead wood.

## RESULTS

**Specimens examined:** Russia, Arkhangelsk region, mountain ridge Vetreniy Poyas, Olovgora, middle part of the southern slope (63°24'67''N, 37°00'24''E), alt. 289 m a. s. l., spruce forest, on branches of *Picea obovata*, 10.06.2012, 11.06.2013 (PZV, herbarium of Petrozavodsk State University).

In the course of detailed study of Olovgora (11 study plots 20×20 m, plus routes covering the

entire territory of Olovgora), only two samples of *Platismatia norvegica* (4x8 cm$^2$ and 3x5 cm$^2$) were recorded in the same locality. The samples were found on the lower branches (1–2 m above ground) of *Picea obovata* (the trees aged 260 and 159 years) (Fig. 3). 49 other lichen species were recorded on the same trees: *Alectoria sarmentosa* (Ach.) Ach., *Bryoria bicolor* (Ehrh.) Brodo & D. Hawksw., *B. capillaris* (Ach.) Brodo & D. Hawksw., *B. furcellata* (Fr.) Brodo & D. Hawksw., *B. fuscescens* (Gyeln.) Brodo & D. Hawksw., *B. implexa* (Hoffm.) Brodo & D. Hawksw., *B. nadvornikiana* (Gyeln.) Brodo & D. Hawksw., *Calicium glaucellum* Ach., *C. viride* Pers., *Chaenotheca chrysocephala* (Turner ex Ach.) Th. Fr., *C. subroscida* (Either) Zahlbr., *C. trichialis* (Ach.) Th. Fr., *Chaenothecopsis consosiata* (Nádv.) A.F.W. Schmidt, *C. fennica* (Laurilla) Tibell, *Cladonia bacilliformis* (Nyl.) Glück, *C. cenotea* (Ach.) Schaer., *C. deformis* (L.) Hoffm., *C. digitata* (L.) Hoffm., *C. pleurota* (Flörke) Schaer., *Cyphelium inquinans* (Sm.) Trevis., *Hypocenomyce friesii* (Ach.) P. James & Gotth. Schneid., *Hypogymnia austerodes* (Nyl.) Räsänen, *H. bitteri* (Lynge) Ahti, *H. physodes* (L.) Nyl., *H. tubulosa* (Schaer.) Hav., *H. vittata* (Ach.) Parrique, *Imshaugia aleurites* (Ach.) S.L.F. Meyer, *Japewia subaurifera* Muhr & Tønsberg, *Lecidea turgidula* Fr., *Lepraria jackii* Tønsberg, *Loxospora elatina* (Ach.) A. Massal., *Melanelia olivacea* (L.) Essl., *Microcalicium disseminatum* (Ach.) Vain., *Mycoblastus sanguinarius* (L.) Norman, *Ochrolechia cf. androgyna* (Hoffm.) Arnold, *Parmelia sulcata* Taylor, *Parmeliopsis ambiqua* (Wulfen) Nyl., *P. hyperopta* (Ach.) Arnold, *Pertusaria amara* (Ach.) Nyl., *Platismatia glauca* (L.) W.L. Culb. & C.F. Culb., *Pseudevernia furfuracea* (L.) Zopf, *Tuckermannopsis chlorophylla* (Willd.) Hale, *Usnea dasypoga* (Ach.) Nyl., *U. subfloridana* Stirt., *Varicellaria rhodocarpa* (Körb.) Th. Fr., *Vulpicida pinastri* (Scop.) J.-E. Mattsson & M.J. Lai, *Xylographa pallens* Nyl., *X. parallela* (Ach.: Fr.) Fr., and *X. vitiligo* (Ach.) J.R. Laundon.

**Fig. 3.** *Platismatia norvegica* on branch of old spruce (Olovgora, Arkhangelsk region, Russia).

The presence of *P. norvegica* in the study area is likely to be explained by the proximity to the White Sea, undisturbed plant communities and suitable microhabitat conditions. We assume that *P. norvegica* needs to be protected in this locality.

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